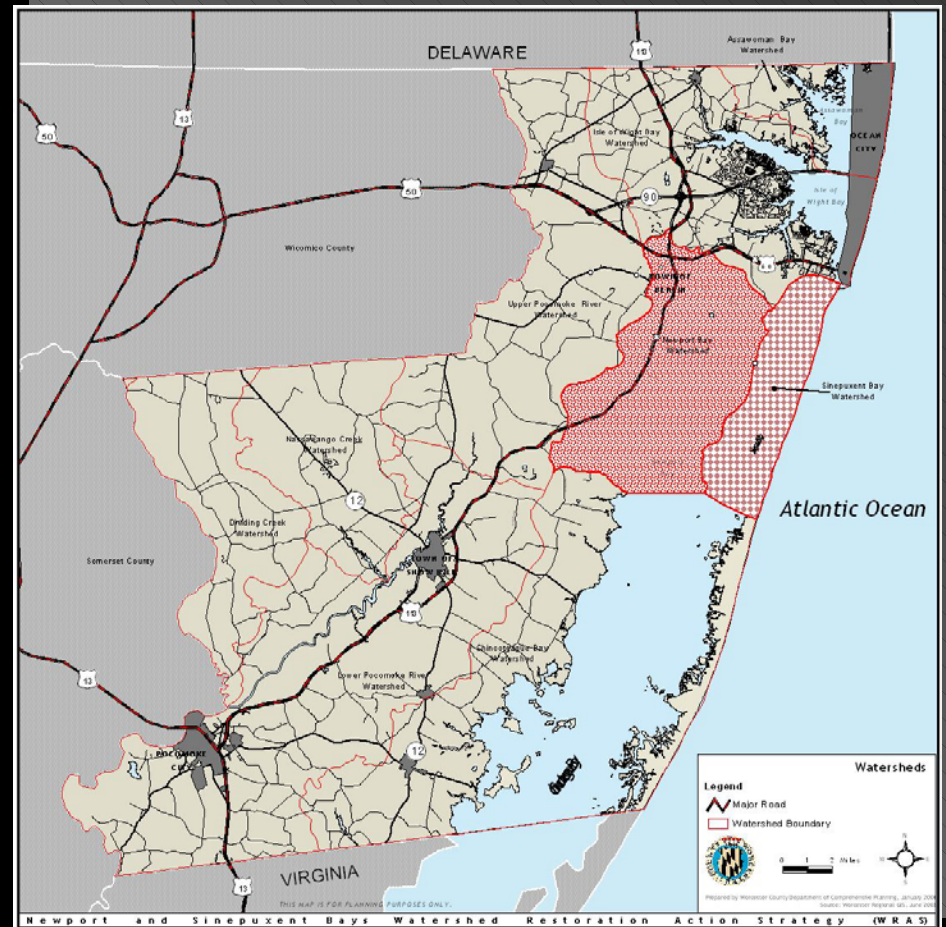# The Newport Bay
TMDL Sensitivity Analysis

Presented by Keota Silaphone
TMDL Implementation Workshop
September 13, 2004

CONTENTS

❖**Background**

❖**Location Map**

❖**TMDL Summary**

❖**Addressing the Newport Bay TMDL**

❖**Sensitivity analysis results**

❖**Improving sensitivity analysis**

❖**Lessons Learned**
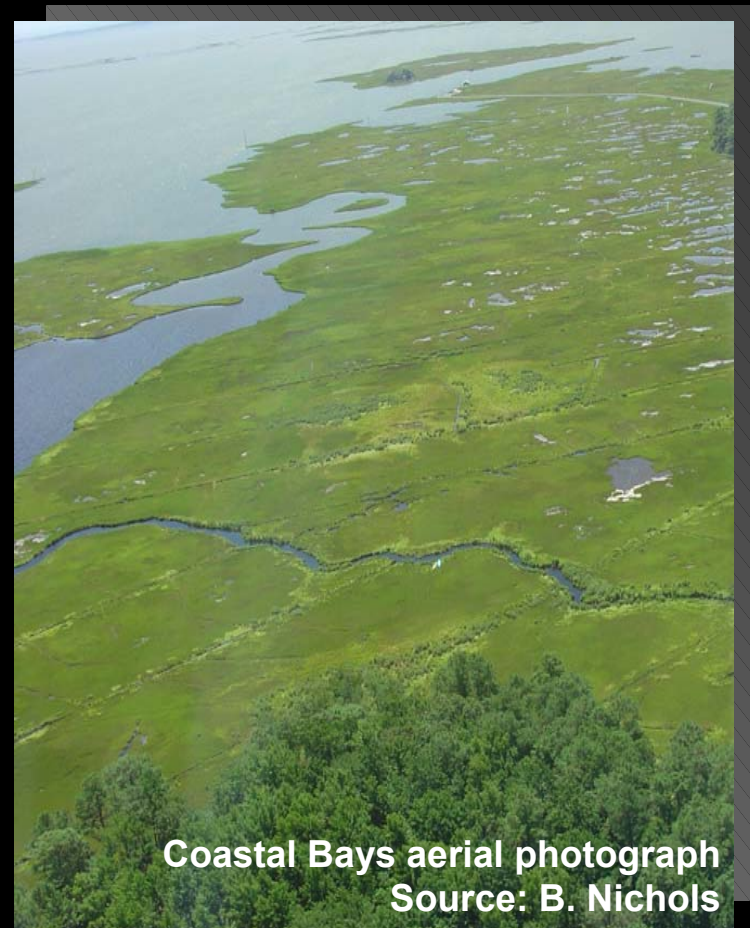

**Newport Bay
Worcester County, MD**

Background

❖ **Watershed Restoration Action Strategy (WRAS)**

❖ **To improve water quality and wildlife habitat**

❖ **Newport Bay and Sinepuxent Bay WRAS**

❖ **WRAS addresses the Newport Bay nitrogen TMDL**

**Coastal Bays aerial photograph
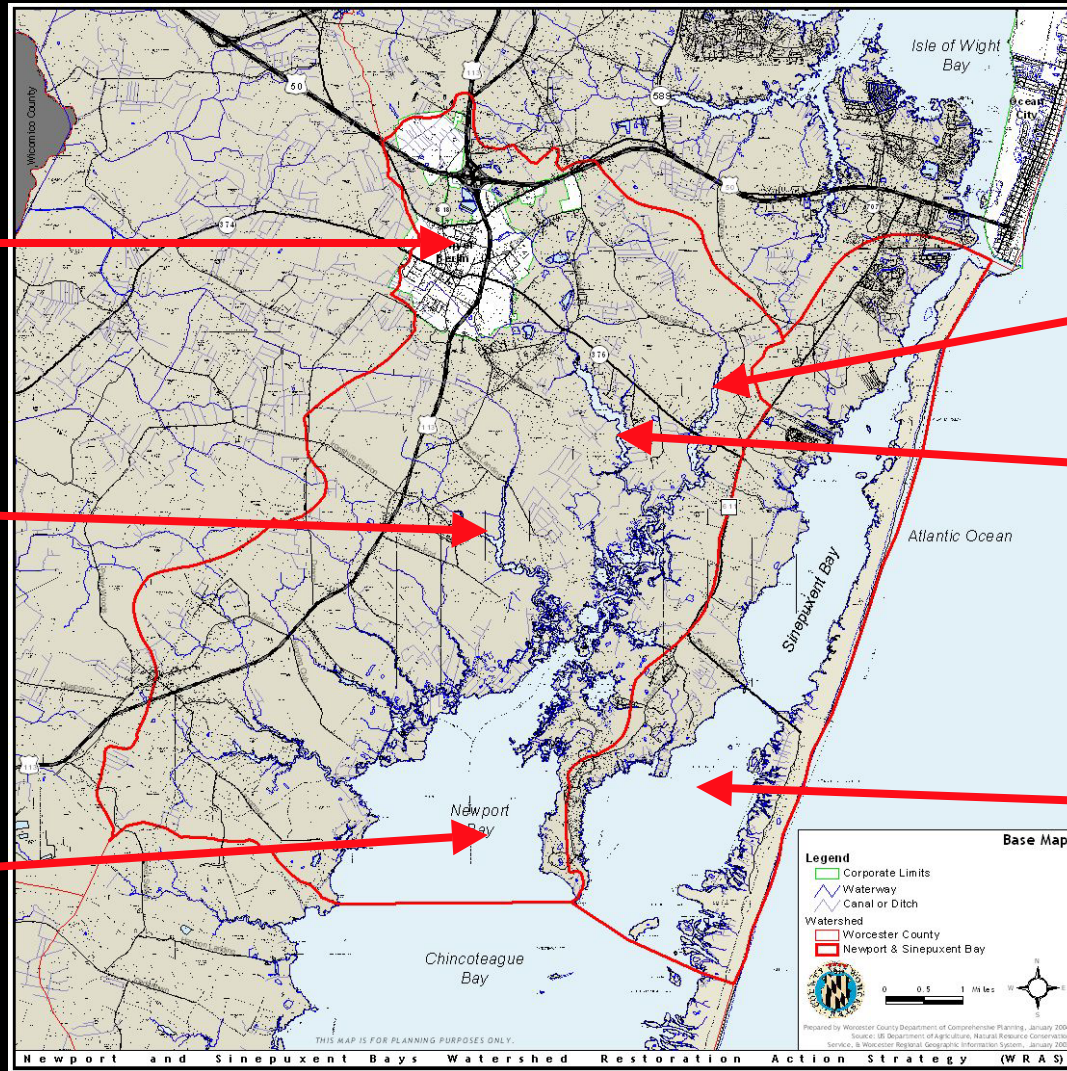Source: B. Nichols**

Location Map

TMDL Summary

❖ **Three separate nutrient TMDLs**

❖ **Newport Creek**

❖ **Ayer Creek**

❖ **Trappe Creek and Newport Bay**

❖ **Source Categories:**

❖ **Atmospheric deposition**

❖ **Deep groundwater**

❖ **Point sources**

❖ **Terrestrial nonpoint sources**

Tyson Wastewater Treatment Plant

Addressing the Newport Bay TMDL

❖ **Set up a spreadsheet to track nitrogen reduction using 3 factors**
- ❖ **BMP efficiencies**
- ❖ **Nitrogen loading**
- ❖ **Acres treated or occupied by BMP**

❖ **Technical Assistance provided by:**
- ❖ **Maryland Department of Environment**
- ❖ **Maryland Department of Natural Resources**
- ❖ **Maryland Department of Agriculture**
- ❖ **Maryland Coastal Bays Program**
- ❖ **Center for Watershed Protection**
- ❖ **National Park Service**

Addressing the Newport Bay TMDL

- ❖ **Two areas of uncertainty:**
  1. **Level of implementation**
     - ❖ **How many acres?**
  2. **BMP efficiency range**
     - ❖ **20% removal – 80% removal**

- ❖ **Level of implementation**
  - ❖ **Optimistic approach**
  - ❖ **Expected approach**

- ❖ **BMP efficiency**
  - ❖ **Low, medium, high scenario**

Addressing the Newport Bay TMDL

Example BMP: Cover Crop using the expected approach

Current Nitrogen Loading		Scenarios: BMP nitrogen efficiency (30% - 45%)		
Acres*	**N loading (lbs/ac/yr)**	**Low**	**Medium**	**High**
2,310	**14.51**	**30%**	**37.5%**	**45%**
Estimated Nitrogen Reduction (lbs/yr)		**10,055**	**12,569**	**15,083**

*Optimistic approach applies BMP to 6,966 acres

Sensitivity Analysis Results

- ❖ **Optimistic approach, high scenario**
  - ❖ **TMDL achieved**

- ❖ **Optimistic approach, low and medium scenario**
  - ❖ **TMDL achievement a challenge**

- ❖ **Expected approach**
  - ❖ **TMDL achievement a challenge**

Improving Sensitivity Analysis

❖ **Continue to work with MDE, DNR, MDA, MCBP, CWP, and NPS**

❖ **Uncertainties exist**

  ❖ **Refine TMDL**

  ❖ **Continue monitoring**

  ❖ **Local BMP effectiveness testing**

  ❖ **Garner staff and other implementation resources**

Lessons Learned

❖ **Appreciation for difficulty of meeting TMDL**

❖ **Appreciation for the effects of different BMPs**

❖ **Understanding that current load estimate is uncertain**

❖ **Better understanding of TMDL**

❖ **Aggressively seek funding to implement BMPs**

Contact Information

Keota Silaphone, Planner III

Worcester County, Dept. of Comprehensive Planning

1 West Market Street, Room 1302

Snow Hill, MD 21863

ksilaphone@co.worcester.md.us

P: (410) 632-5651

James George, Ph.D.

Technical and Regulatory Services Administration

Maryland Department of the Environment

Montgomery Business Park

1800 Washington Blvd Suite 540

Baltimore, MD 21230-1718

jgeorge@mde.state.md.us

P: (410) 537-3902